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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/681,388	10/07/2003	John H. Kenten	IGN-2005US03	7445

7590 10/18/2005

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EXAMINER	
HISSONG, BRUCE D	

ART UNIT	PAPER NUMBER
1646	

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/681,388	KENTEN ET AL.	
	Examiner	Art Unit	
	Bruce D. Hissong	1646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *86* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *86* is/are rejected.

7)☒ Claim(s) *86* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 1/9/04
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Formal matters

Applicant's amendment to the claims was received on 10/7/2003 and has been made of record. Claims 1-85 and 87-100 have been cancelled. Claim 86 is currently pending and is the subject of this Office Action.

Response to pre-exam sequence notice

Applicant's response to the pre-exam sequence notice, received on 2/2/2004, is noted and has been made of record.

Information Disclosure Statement

The information disclosure statement dated 1/9/2004 has been made of record and has been fully considered. Dalum *et al* has been lined through because "The American Association of Immunologists" does not indicate the source of the citation, and is therefore in improper form. If citation in proper format is submitted, the reference will then be considered.

Specification

1. The specification is objected to because the title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The following title is suggested: Methods of antibody identification using ubiquitin-fusion proteins.

2. The specification is objected to as being inconsistent with the bibliographic data sheet. All continuing data (such as parent applications) must be listed on the first line of the specification.

3. The specification is objected to for omission of sequence identifiers. According to 37 CFR 1.821(d) (MPEP § 2422), where the description or claims of a patent application discuss a sequence listing that is set forth in the "Sequence Listing" in accordance with paragraph (c) of this section, reference must be made to the sequence by use of the assigned identifier, in the text of the description or claims, even if the sequence is also embedded in the text of the description or claims of the patent application. Sequences appear on page 20, line 24, of the specification but are not identified by SEQ ID NO as required.

Claim Objections

Claim 86 is objected to because of the following informalities: Claim 86, part (a) recites a "fusion protein *of* selected from the group.....". The meaning of this statement is not clear. Appropriate clarification/correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 86 is rejected under 35 U.S.C. 101 because the claimed invention is not supported by a specific, substantial and credible asserted utility. The claim of the instant application is drawn to a method of for the identification of antibodies in experimental or diagnostic samples, using an ubiquitin fusion protein as an antigen capable of binding to antibodies present in said samples. This asserted utility is not specific. Because such assays can be performed with any protein or polypeptide antigen, regardless of the inclusion of ubiquitin in the antigen, the asserted utility is not specific to the ubiquitin fusion proteins of the instant invention. Additionally, this asserted utility is not substantial. The specification does not disclose a purpose for identifying antibodies from samples other than diagnostic purposes, and does not disclose any specific diseases or conditions for which this invention would be useful diagnostically.

Claim Rejections - 35 USC § 112, first paragraph – enablement

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The factors to be considered when determining if the disclosure satisfies the enablement requirement have been summarized as the quantity of experimentation necessary, the amount of direction or guidance presented, the presence or absence of working examples, the nature of the invention, the state of the prior art, the relative skill of those in the art, the predictability or

unpredictability of the art, and the breath of claims. Ex Parte Forman, (230 USPQ 546 (Bd. Pat. App. & Int. 1986); In re Wands, 858 F.2d 731, 8 USPQ 2d 1400 (Fed. Cir. 1988).

1. Claim 86 is rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific asserted utility or a well established utility (see above). Claim 86 also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

2. Claim 86 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In the instant case, the claim is drawn to an ubiquitin fusion protein that is comprised of fusing ubiquitin with one or more antigenic epitopes. The specification, on page 6, lines 17-19, defines epitopes as "recombinant immunologically active heterologous antigens (referred to herein as epitopes)". Given the broadest possible interpretation, an epitope can therefore be virtually any protein or polypeptide capable of initiating a cellular or humoral immune response. The specification does disclose the possible use of various T cell epitopes (see p. 13, lines 25-27), and also discloses the use of several B cell epitopes, including the V3 loop of HIV gp120, prostate-specific antigen, and GnRH. However, the specification is not enabling for any other potential epitope. The specification does not teach, or provide examples demonstrating how to use fusion proteins with epitopes other than those stated above, nor is it predictable to the artisan which other epitopes could be used to identify antibodies. A person of ordinary skill in the art would not know how to make or use fusion proteins with epitopes other than those disclosed in the specification, and it would require undue experimentation to know how to use the claimed invention with epitopes other than those stated above. Therefore, because of the breadth of the claims, the lack of guidance and examples in the specification, the unpredictability inherent in the art and the invention as claimed, and the quantity of experimentation needed to practice the invention, the claim is not enabling.

Claim Rejections - 35 USC § 112, first paragraph – written description

Claim 86 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claim is drawn to a method that utilizes an ubiquitin fusion protein that is comprised of fusing ubiquitin with one or more antigenic epitopes. Because the antigenic epitopes can be interpreted as any antigenic polypeptide or protein, the Applicants are claiming a genus of polypeptides that are defined only by biological activity.

To provide adequate written description and evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of compete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof. In this case, the only factor present in the claim is the functional characteristic of antigenicity. Accordingly, in the absence of sufficient recitation of distinguishing identifying characteristics, the specification does not provide adequate written description of the claimed genus.

Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111, clearly states "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention.* The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed.*" (See page 1117) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See *Vas-Cath* at page 1116). As discussed above, the skilled artisan cannot envision the detailed chemical structure of the encompassed genus of polypeptides, and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating it. The compound itself is required. See *Fiers v. Revel*, 25 USPQ2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ2d 1016.

One cannot describe what one has not conceived. See *Fiddes v. Baird*, 30 USPQ2d 1481 at 1483. In *Fiddes*, claims directed to mammalian FGF's were found to be unpatentable due to lack of written description for that broad class. The specification provided only the bovine sequence.

Therefore, only ubiquitin fusion proteins containing epitopes described previously in the paragraph regarding enablement, but not the full breadth of the claims, meets the written description provision of 35 U.S.C. §112, first paragraph. Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 U.S.C. §112 is severable from its enablement provision (see page 1115).

Claim Rejections - 35 USC § 112, second paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 86 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 86 depends from cancelled claims, and is therefore indefinite.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claim 86 is rejected under 35 U.S.C. 102(b) as being anticipated by Vannier *et al* (Biochemistry, 1996, Vol 35:1358-1366, and see information disclosure statement). The claim is drawn to a method for identifying antibodies in experimental or diagnostic samples, comprising providing an ubiquitin fusion protein and antibodies from an experimental or clinical source, mixing and incubating the fusion protein and the antibodies, and detecting antibodies bound to the fusion protein. Due to the breadth of the claims, as described above, the ubiquitin fusion protein can consist of ubiquitin fused to any antigenic polypeptide or protein. Vannier *et al* teach an ELISA method of identifying antibodies from experimental samples using an ubiquitin-hFSHR fusion protein. The method of detection of fusion protein-antibody binding is by standard ELISA techniques. Therefore, the method of Vannier *et al* anticipates the instant invention by teaching an ubiquitin fusion protein (Ub-hFSHR), an experimental sample (hybridoma supernatants), and a method of detecting fusion protein-antibody binding (ELISA).

The relevant text in Vannier *et al* can be found on page 1359, second column, lines 7-11 of the first paragraph.

2. Claim 86 is rejected under 35 U.S.C. 102(b) as being anticipated by Loosfelt *et al* (Proc. Natl. Acad. Sci. USA, 1992, Vol 89:3765-2769). The claim of the present invention is recited in the above paragraph. Loosfelt *et al* disclose a method for detecting thyrotropin receptor (TSHR)-specific antibodies from hybridoma supernatants using an ubiquitin-fusion protein in an ELISA (page 3765, second column, lines 15-19). Loosfelt *et al* therefore anticipates the claim of the instant invention by teaching an ubiquitin-TSHR fusion protein, an experimental sample, and method of detection (ELISA).

Conclusion

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bruce D. Hissong, Ph.D., whose telephone number is (571) 272-3324. The examiner can normally be reached on M-F from 8:30am - 5:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Caputa, Ph.D., can be reached at (571) 272-0829. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BDH
Art Unit 1646

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PRIMARY EXAMINER